Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented): A magnetometer comprising:

an electrically conducting string, the string receiving a current; and
means for supporting the string in tension at two locations, the string being capable of vibrating in any direction orthogonal to its axis;
the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string along multiple axes that can be detected.

B1 Cont'd

2. (original): The magnetometer as recited in claim 1, wherein the electrically conducting string comprises an insulating fiber coated with an electrically conducting material.

3. (previously presented): The magnetometer of claim 2, further comprising a light source for inserting light into the fiber, wherein the fiber is light conducting.

4. (previously presented): The magnetometer as recited in claim 1, further comprising a means for varying the tension of the string.

5. (original): The magnetometer as recited in claim 4, the means for varying the tension comprising piezo elements placed under the means for supporting.

6. (currently amended): ~~The magnetometer as recited in claim 1, further comprising~~ A magnetometer comprising: a silicon substrate; ~~containing~~ a plurality of electrically conducting strings of varying lengths, each string being placed on the substrate and being capable of receiving a current; means for supporting each string in tension at two locations on the substrate, the string being capable of vibrating in any direction orthogonal to its axis; the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string along multiple axes that can be detected, the current being switchable between the strings to change the resonant frequency of the magnetometer and thereby the magnetic field that can be detected.

B1 cont'd

7. (original): A magnetometer array comprising a plurality of the magnetometers of claims 1, 2, or 3, wherein the magnetometers are joined end to end with the portion of the string or fiber connecting two magnetometers not in tension.

8. (original): The magnetometer array as recited in claim 7, further comprising means for varying the tension in the string or fiber of each magnetometer in the array.

9. (original): The magnetometer array as recited in claim 8, the means for varying the tension comprising piezo elements placed under the means for supporting.

10. (currently amended): ~~The magnetometer array as recited in claim 7, further~~ A magnetometer array comprising a plurality of magnetometers, each magnetometer comprising:

a silicon substrate;

~~containing~~ a plurality of electrically conducting strings ~~or fibers~~ of varying lengths, each string being placed on the substrate and being capable of receiving a current;

B1 Cont'd

means for supporting each string in tension at two locations on the substrate, the string being capable of vibrating in any direction orthogonal to its axis; the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string along multiple axes that can be detected, the current being switchable between the strings ~~or fibers~~ to change the resonant frequency of the magnetometer and thereby the magnetic field that can be detected;

wherein the magnetometers are joined end to end with the portion of the string connecting two magnetometers not in tension .

11. (previously presented): The magnetometer of claim 3, further comprising means for detecting the deflection in the fiber.

12. (currently amended): ~~The magnetometer as recited in claim 11~~A magnetometer comprising:

an electrically conducting string comprising an insulating fiber coated with an electrically conducting material, the string receiving a current; means for supporting the string in tension at two locations, the string being capable of vibrating in any direction orthogonal to its axis;

a light source for inserting light into the fiber, wherein the fiber is light conducting; and

means for detecting the deflection in the fiber, the means for detecting comprising:

a first aperture in the conducting material on the fiber; and

B' cont'd

a detector for detecting light escaping through the aperture;

the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string along multiple axes that can be detected.

13. (original): The magnetometer as recited in claim 12, wherein the detector comprises a position sensitive lateral cell optical detector.

14. (original): The magnetometer as recited in claim 12, wherein the detector comprises a multi-cell optical detector.

15. (original): The magnetometer as recited in claim 12, wherein the detector comprises a CCD detector.

16. (original): The magnetometer as recited in claim 12, further comprising a defect in the fiber surface for increasing scattered amplitude and, hence, signal-to -noise ratio.

17. (original): The magnetometer as recited in claim 12, further comprising a scattering means in the center of the fiber for increasing scattered amplitude and, hence, signal-to-noise ratio.

18. (previously amended): The magnetometer as recited in claim 12, further comprising a second aperture in the conducting material on the fiber, the second aperture

being orthogonal to the first aperture for simultaneous measurement of two orthogonal vector components of the motion of the fiber and, hence, two magnetic field components.

B1 Cont'd

19. (previously presented): A method for detecting multiple vector magnetic fields comprising the steps of:

supporting an electrically conducting string in tension at two locations, the string being capable of vibrating in any direction orthogonal to its axis;

inserting a current at one end of the string and extracting it at the other end;

placing the string in a magnetic field perpendicular to the direction of the current in the string, thereby producing a Lorentz Force perpendicular to the string, the Lorentz Force causing deflection in the string; and

detecting the deflection in the string along multiple axes.

20. (original): The method as recited in claim 19, wherein the electrically conducting string comprises an insulating fiber coated with an electrically conducting material.

21. (original): The method as recited in claims 19 or 20, further comprising the step of varying the tension of the string or fiber.

22. (previously presented): A method for detecting multiple vector magnetic fields comprising the steps of:

supporting a light conducting fiber coated with an electrically conducting material in tension at two locations, the fiber being capable of vibrating in any direction orthogonal to its axis;

inserting a current and light at one end of the fiber and extracting the current and light at the other end;

B1 Cont'd

placing the fiber in a magnetic field perpendicular to the direction of the current in the fiber, thereby producing a Lorentz Force perpendicular to the fiber, the Lorentz Force causing deflection in the fiber; and

detecting the deflection in the fiber along multiple axes.

23. (original): The method as recited in claim 22, further comprising the step of varying the tension of the fiber.

24. (currently amended): ~~The method as recited in claim 23, further comprising the steps of:~~ A method for detecting multiple vector magnetic fields comprising the steps of:

supporting a light conducting fiber coated with an electrically conducting material in tension at two location, the fiber being capable of vibrating in any direction orthogonal to its axis; forming an aperture in the conducting material on the fiber; ~~and~~

inserting a current and light at one end of the fiber and extracting the current and light at the other end;

placing the fiber in a magnetic field perpendicular to the direction of the current in the fiber, there by producing a Lorentz Force perpendicular to the fiber, the Lorentz Force causing deflection in the fiber;

varying the tension of the fiber;

detecting the light escaping through the aperture; and

detecting the deflection in the fiber along multiple axes.

B1 end

25. (previously presented): A magnetometer comprising:

a mechanical means for resonating other than a bar, the resonating means receiving a current;

means for supporting the resonating means; and

means for varying the tension of the resonating means;

the magnetometer being placed in a magnetic field to be detected, the magnetic field being perpendicular to the direction of the current and producing a Lorentz Force perpendicular to the resonating means, the Lorentz Force causing deflection in the resonating means that can be detected.

26. (new): The magnetometer array as recited in claim 10, wherein the electrically conducting string comprises an insulating fiber coated with an electrically conducting material.

27. (new): The magnetometer of claim 26, further comprising a light source for inserting light into the fiber, wherein the fiber is light conducting.